CLAIMS

What is claimed is:

1   1.   A method for arranging digital images, comprising:
2   generating a first trial pack and a second trial pack, such that in the first
3   trial pack the digital images are uniquely oriented as compared to the second
4   trial pack;
5   comparing the trial packs; and
6   selecting one of the trial packs based on the comparison.

1   2.   The method of Claim 1, wherein comparing comprises identifying a
2   trial pack that leaves the least unused space, and wherein selecting comprises
3   selecting the identified trial pack.

1   3.   A method for arranging digital images on a page, comprising:
2   defining a packing area;
3   if it will fit in the packing area, packing a digital image in the first
4   orientation in a first trial pack; and
5   if it will fit in the packing area, packing the digital image in the second
6   orientation in a second trial pack.

1   4.   The method of Claim 3, further comprising:
2   identifying a largest image size that will fit in the packing area; and
3   wherein packing the digital image in the first orientation includes, if a
4   digital image of the identified size will fit in the first orientation, packing as many
5   digital images of the identified size as possible in the first trial pack; and
6   wherein packing the digital image in the second orientation includes, if a
7   digital image of the identified size will fit in the second orientation, packing as
8   many digital images of the identified size as possible in the second trial pack.

1   5.   The method of Claim 4, wherein:
2   identifying a largest size, comprises identifying, from a set of digital
3   images, a largest image size that will fit in the packing area; and

1   packing as many digital images of the identified size as possible

2   comprises repeatedly packing digital images of the identified size in a given

3   orientation until either another digital image of the identified size will not fit or

4   no digital image of the identified size remains in the set.

1   6.   A method for generating trial packs from a set of digital images,

2   comprising

3   opening a trial pack as an empty page;

4   continuing, if possible, each open trial pack and closing each trial pack

5   that cannot be continued; and

6   repeating the steps of continuing and closing until no trial pack remains

7   open.

1   7.   The method of Claim 6, wherein continuing, comprises:

2   defining a packing area;

3   upon determining that at least one digital image from the set that has yet

4   to be packed in the open trial pack will fit in the packing area;

5   identifying a largest size of a digital image remaining in the

6   set that will fit in the packing area;

7   if it will fit, packing a digital image of the identified size in a

8   first orientation and continuing the open trial pack as a first child

9   trial pack; and

10   if it will fit, packing a digital image of the identified size in a

11   second orientation and continuing the trial pack as a second child

12   trial pack.

1   8.   The method of Claim 7, wherein:

2   packing the identified digital image in the first orientation comprises

3   packing as many digital images of the identified size as possible in the first

4   orientation and continuing the open trial pack as a first child trial pack; and

5   packing the identified digital image in the second orientation comprises

6   packing as many digital images of the identified size as possible in the second

7   orientation and continuing the open trial pack as a second child trial pack.

1   9.   The method of Claim 8, wherein packing as many digital images of
2   the identified size as possible comprises repeatedly packing digital images of the
3   identified size in a given orientation until either another digital image of the
4   identified size will not fit or no digital image of the identified size remains in the
5   set.

1   10.   The method of Claim 7, wherein closing comprises, for each open
2   trial pack, closing that pack if no digital image from the set that has yet to be
3   packed in the open trial pack will fit in the packing area.

1   11.   A method for arranging a set of digital images on a page,
2   comprising:
3   selecting a set of digital images;
4   generating trial packs for the selected set of digital images;
5   comparing the trial packs;
6   selecting a trial pack based upon the comparison; and
7   determining if any of the digital images from the set were not used in the
8   selected trial pack, and if any digital images are determined to not be used,
9   selecting the unused digital images as the set of digital images and repeating the
10   steps of generating, comparing, selecting, and determining.

1   12.   The method of Claim 11, wherein generating trial packs comprises:
2   opening a trial pack as an empty page;
3   continuing, if possible, each open trial pack and closing each trial pack
4   that cannot be continued; and
5   repeating the steps of continuing and closing until no trial pack remains
6   open.

1   13.   The method of Claim 12, wherein comparing comprises comparing
2   closed trial packs.

14. The method of Claim 12, wherein continuing, comprises:

defining a packing area;

upon determining that at least one digital image from the set that has yet to be packed in the open trial pack will fit in the packing area;

identifying a largest size of a digital image remaining in the set that will fit in the packing area;

if it will fit, packing a digital image of the identified size in a first orientation and continuing the open trial pack as a first child trial pack; and

if it will fit, packing a digital image of the identified size in a second orientation and continuing the trial pack as a second child trial pack.

15. The method of Claim 14, wherein:

packing the identified digital image in the first orientation comprises packing as many digital images of the identified size as possible in the first orientation and continuing the open trial pack as a first child trial pack; and

packing the identified digital image in the second orientation comprises packing as many digital images of the identified size as possible in the second orientation and continuing the open trial pack as a second child trial pack.

16. The method of Claim 15, wherein packing as many digital images of the identified size as possible comprises repeatedly packing digital images of the identified size in a given orientation until either another digital image of the identified size will not fit or no digital image of the identified size remains in the set.

17. The method of Claim 14, wherein closing comprises, for each open trial pack, closing that pack if no digital image from the set that has yet to be packed in the open trial pack will fit in the packing area.

1   18.   The method of Claim 14, wherein defining a packing area
2 comprises identifying a geometry of a packed space and defining a packing area
3 according the geometry of the packed space.

1   19.   The method of Claim 14, wherein defining a packing area
2 comprises identifying a packed space as rectangular, identifying left over spaces
3 located diagonally, vertically, and horizontally relative to the packed space,
4 combining the diagonal space with either the vertical space or the horizontal
5 space creating a combined space having a maximized small dimension, and
6 defining a first packing area as the combined space and defining a second
7 packing area as the remaining horizontal or vertical space.

1   20.   The method of Claim 14, wherein identifying a packing area
2 comprises identifying a packed space as irregular, maximizing a jagged space,
3 identifying remaining spaces that are located vertically and horizontally relative
4 to the packed space, defining a first packing area as the maximized jagged
5 space, defining a second packing area as the left over vertical space, and
6 defining a third packing are as the left over horizontal space.

1   21.   A computer readable medium having instructions for:
2   generating a first trial pack and a second trial pack, such that in the first
3 trial pack digital images are uniquely oriented as compared to the second trial
4 pack;
5   comparing the trial packs; and
6   selecting one of the trial packs based on the comparison.

1   22.   The medium of Claim 21, wherein the instructions for comparing
2 include instructions for identifying a trial pack that leaves the least unused
3 space, and wherein the instructions for selecting include instructions for
4 selecting the identified trial pack.

1   23.   A computer readable medium having instructions for:
2   defining a packing area;

3   if it will fit in the packing area, packing a digital image in the first

4 orientation in a first trial pack; and

5   if it will fit in the packing area, packing the digital image in the second

6 orientation in a second trial pack.

1   24.   The medium of Claim 23, having further instruction for:

2   identifying a largest image size that will fit in the packing area; and

3   wherein the instructions for packing the digital image in the first

4 orientation include instructions for, if a digital image of the identified size will fit

5 in the first orientation, packing as many digital images of the identified size as

6 possible in the first trial pack; and

7   wherein the instructions for packing the digital image in the second

8 orientation include instructions for, if a digital image of the identified size will fit

9 in the second orientation, packing as many digital images of the identified size

10 as possible in the second trial pack.

1   25.   The medium of Claim 24, wherein the instructions for:

2   identifying a largest size, comprises identifying, from a set of digital

3 images, a largest image size that will fit in the packing area; and

4   packing as many digital images of the identified size as possible

5 comprises repeatedly packing digital images of the identified size in a given

6 orientation until either another digital image of the identified size will not fit or

7 no digital image of the identified size remains in the set.

1   26.   A computer readable medium having instructions for:

2   selecting a set of digital images;

3   opening a trial pack as an empty page;

4   continuing, if possible, each open trial pack and closing each trial pack

5 that cannot be continued; and

6   repeating the instructions for continuing and closing until no trial pack

7 remains open.

1   27.   The medium of Claim 26, wherein the instructions for continuing,
2 include instructions for:

3   defining a packing area;

4   upon determining that at least one digital image from the set that has yet
5 to be packed in the open trial pack will fit in the packing area;

6   identifying a largest size of a digital image remaining in the
7   set that will fit in the packing area;

8   if it will fit, packing a digital image of the identified size in a
9   first orientation and continuing the open trial pack as a first child
10   trial pack; and

11   if it will fit, packing a digital image of the identified size in a
12   second orientation and continuing the trial pack as a second child
13   trial pack.

1   28.   The medium of Claim 27, wherein the instructions for:
2   packing the identified digital image in the first orientation include
3 instructions for packing as many digital images of the identified size as possible
4 in the first orientation and continuing the open trial pack as a first child trial
5 pack; and

6   packing the identified digital image in the second orientation include
7 instructions for packing as many digital images of the identified size as possible
8 in the second orientation and continuing the open trial pack as a second child
9 trial pack.

1   29.   The medium of Claim 28, wherein the instructions for packing as
2 many digital images of the identified size as possible include instructions for
3 repeatedly packing digital images of the identified size in a given orientation until
4 either another digital image of the identified size will not fit or no digital image of
5 the identified size remains in the set.

1   30.   The medium of Claim 27, wherein the instructions for closing
2   include instructions for, for each open trial pack, closing that pack if no digital
3   image from the set that has yet to be packed in the open trial pack will fit in the
4   packing area.

1   31.   A computer readable medium having instructions for
2   selecting a set of digital images;
3   generating trial packs for the selected set of digital images;
4   comparing the trial packs;
5   selecting a trial pack based upon the comparison; and
6   determining if any of the digital images from the set were not used in the
7   selected trial pack, and if any digital images are determined to not be used,
8   selecting the unused digital images as the set of digital images and repeating the
9   steps of generating, comparing, selecting, and determining.

1   32.   The medium of Claim 31, wherein the instructions for generating
2   trial packs include instructions for:
3   opening a trial pack as an empty page;
4   continuing, if possible, each open trial pack closing each trial pack that
5   cannot be continued; and
6   repeating the instruction for continuing and closing until no trial pack
7   remains open.

1   33.   The medium of Claim 32, wherein the instructions for comparing
2   include instructions for comparing closed trial packs.

1   34.   The medium of Claim 32, wherein the instructions for continuing,
2   include instructions for:
3   defining a packing area;
4   upon determining that at least one digital image from the set that has yet
5   to be packed in the open trial pack will fit in the packing area;
6   identifying a largest size of a digital image remaining in the
7   set that will fit in the packing area;

8   if it will fit, packing a digital image of the identified size in a
9   first orientation and continuing the open trial pack as a first child
10   trial pack; and

11   if it will fit, packing a digital image of the identified size in a
12   second orientation and continuing the trial pack as a second child
13   trial pack.

1   35.   The medium of Claim 34, wherein:
2   the instructions for packing the identified digital image in the first
3   orientation include instructions for packing as many digital images of the
4   identified size as possible in the first orientation and continuing the open trial
5   pack as a first child trial pack; and
6   the instructions for packing the identified digital image in the second
7   orientation include instructions for packing as many digital images of the
8   identified size as possible in the second orientation and continuing the open trial
9   pack as a second child trial pack.

1   36.   The medium of Claim 35, wherein the instructions for packing as
2   many digital images of the identified size as possible include instructions for
3   repeatedly packing digital images of the identified size in a given orientation until
4   either another digital image of the identified size will not fit or no digital image of
5   the identified size remains in the set.

1   37.   The medium of Claim 34, wherein the instructions for closing
2   include instructions for, for each open trial pack, closing that pack if no digital
3   image from the set that has yet to be packed in the open trial pack will fit in the
4   packing area.

1   38.   The medium of Claim 34, wherein the instructions for defining a
2   packing area include instructions for identifying a geometry of a packed space
3   and defining a packing area according the geometry of the packed space.

1   39.   The medium of Claim 34, wherein the instructions for defining a
2   packing area include instructions for identifying a packed space as rectangular,
3   identifying left over spaces located diagonally, vertically, and horizontally relative
4   to the packed space, combining the diagonal space with either the vertical space
5   or the horizontal space creating a combined space a maximized small dimension,
6   and defining a first packing area as the combined space and defining a second
7   packing area as the remaining horizontal or vertical space.

1   40.   The medium of Claim 34, wherein the instructions for defining a
2   packing area include instructions for identifying a packed space as irregular,
3   maximizing a jagged space, identifying remaining spaces that are located
4   vertically and horizontally relative to the packed space, defining a first packing
5   area as the maximized jagged space, defining a second packing area as the left
6   over vertical space, and defining a third packing are as the left over horizontal
7   space.

1   41.   A packing module for arranging digital images, comprising:
2   a trial pack generator operable to generate a first trial pack and a second
3   trial pack, such that digital images in the first trial pack are uniquely oriented as
4   compared to digital images in the second trial pack; and
5   a pack selector operable to compare the trial packs and select one of the
6   trial packs based on the comparison.

1   42.   The packing module of Claim 41, wherein the pack selector is
2   operable to identify a trial pack that leaves the least unused space and to select
3   the identified trial pack.

1   43.   A system for arranging a set of digital images, comprising a
2   a trial pack generator operable to generate trial packs for the set of digital
3   images;
4   a pack selector operable to compare generated trial packs generated by
5   the trial pack generator, to select a trial pack based upon the comparison; and,
6   until all digital image from the set are used in one of one or more selected trial

1   packs, to direct the trial pack generator to generate new trial packs for any

2   digital images not used in a selected trial pack.

1   44.   The system of Claim 43, wherein the trial pack generator includes:

2   a packing area selector operable to define a packing area;

3   a packager operable to open a trial pack as an empty page and, using

4   packing areas defined by the packing area selector, to repeatedly continue , if

5   possible, each open trial pack and to close each open trial pack that cannot be

6   continued until no trial pack remains open.

1   45.   The system of Claim 44, wherein:

2   the pack generator includes a coordinator operable to identify from the set

3   a largest size of a digital image remaining in the set that will fit in a space

4   identified by the packing area selector; and

5   the packager is operable to continue an open trial pack by;

6   if it will fit, packing a digital image of the identified size in a

7   first orientation in an packing area and continuing the open trial

8   pack as a first child trial pack; and

9   if it will fit, packing a digital image of the identified size in a

10   second orientation and continuing the trial pack as a second child

11   trial pack.

1   46.   The system of Claim 44, wherein the packager is operable to, for

2   each open trial pack, close that trial pack if no digital image from the set that

3   has yet to be packed in the open trial pack will fit in the packing area.

1   47.   The system of Claim 44, wherein the pack selector is operable to,

2   once all open trial packs have been closed, compare the closed trial packs and

3   select one of the closed trial packs based on the comparison.

1   48.   A packing module for arranging digital images, comprising:

2   a means for generating a first trial pack;

3   a means for generating a second trial pack, such that digital images in the

4   second trial pack are uniquely oriented as compared to digital images in the first

5   trial pack;

6   a means for comparing the trial packs; and

7   a means for selecting one of the trial packs based on the comparison.